## REMARKS

Claims 1-7 are all the claims pending in the application. Applicants thank the Examiner for acknowledging Applicants' claim for foreign priority and receipt of the certified priority document. Applicants also thank the Examiner for considering the references provided as part of the June 8, 2001 and August 28, 2003 Information Disclosure Statements.

Applicants kindly request that the Examiner acknowledge acceptance of the drawings in the next Office Action.

### Claim Rejections - 35 U.S.C. § 102(e)

Claims 1-6 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Yokoyama et al., (hereinafter referred to as "Yokoyama"). Yokoyama discloses a motion vector estimation system used for encoding a moving picture. More particularly, Yokoyama discloses a system and method for estimating motion vectors, determining "statistics" of these motion vectors, and then using these "statistics" for determining (setting) a shift vector used in conjunction with shifting a limited search window used for future searches of the motion vectors.

The present invention is also related to searching for or estimating motion vectors. As part of its novelty, the present invention claims (as recited in claim 1):

*a learning portion for learning tendencies of the searched motion vectors for previous pictures previous to a current picture of the pictures of said input picture signal to produce tendency information representative of said tendencies; and*

*a determining portion for determining the search area for each of the blocks of said
current picture on the basis of said tendency information.*

The Examiner generally alleges that the claimed learning portion is disclosed by the
motion vector statistics processing section 104 of Yokoyama, by his citation of Yokoyama, col.
5, lines 30-53, and that the determining portion is disclosed in col. 9, line 45 through col. 10, line
20 (see Office Action, page 3, first paragraph).  However, despite similarities between the
present invention and commonly assigned Yokoyama, Applicants respectfully submit that
Yokoyama does not disclose or suggest the aforementioned features recited in claim 1.

More specifically, the statistics processing section 104 of Yokoyama is not suggestive of
a learning portion for *"learning tendencies of the searched motion vectors"*  In Yokoyama, the
statistics processing portion calculates statistics including an average value and a histogram of
the estimated motion vector (see col. 5, lines 32-33).  In the calculation of the average value, the
motion vector values are accumulated (added), and then divided by the number of the estimated
motion vectors to obtain an average value of the motion vector (see col. 5, lines 34-40).  The
histogram is used to determine or depict motion vector occurrence frequency data (see col. 5,
lines 47-52). That is, how frequent or often a motion vector occurs in a search window.

The present invention uses the different concept of "tendencies" to search for motion
vectors.  In the present invention, motion vector information (for example, position of the motion
vector at a certain time) regarding a selected picture element is obtained and stored.  This data is
then analyzed for tendency of movement of the selected picture element.  As such, it can be

predicted where the next position of the picture element is likely be at a certain time based on the tendency of its movement.

Thus, the concepts of the present invention and Yokoyama are different. In Yokoyama, data about the motion vector is looked at to determine how often (frequency) a motion vector occurs in a search window. Using this information, the area where the motion vector most occurs is where the search window will be moved. On the other hand, the present invention uses data about the motion vector to determine its tendency of movement and to move the search window accordingly. The statistical method of Yokoyama is not suggestive of this tendency feature. Accordingly, claim 1, as well as dependent claims 2-6 are allowable.

Claim 2 recites that the learning portion learns the tendencies of the motion vectors for said previous pictures by detecting horizontal and vertical components of the searched motion vectors for said pictures. The Examiner states that this feature is disclosed by Yokoyama, in col. 6, lines 45-65. However, this section does not even suggest horizontal or vertical components of a *motion vector*. Quite unrelated, this section of Yokoyama describes setting a *shift vector* by using a "binary" histogram. One of ordinary skill in the art would recognize that the claimed motion vector and the shift vector are separate elements having different functions. Thus, claim 2 is allowable for this feature as well as its dependence on claim 1.

Claim 3 recites that the determining portion determines the search area on the basis of the horizontal and vertical components of the searched motion vectors. The Examiner states that this feature is taught by Yokoyama at col. 9, lines 10-45. First, as discussed above for claim 2, the

Examiner's citation of a shift vector for the recited motion vector (and its horizontal and vertical

components) is not technically accurate. Therefore, the underlying premise behind the rejection

of claim 3 is also incorrect. Further, the section cited by the Examiner as disclosing this feature

is also not persuasive. Col. 9 discloses determining a shift vector. This shift vector is

determined based on the corresponding statistics values of the motion vector (see col. 9, lines 31-

39). As discussed above, the "statistics" calculated by Yokoyama are based on a "mean"

calculation or a frequency determination using a histogram. These types of statistical

calculations would not factor in horizontal and vertical components of the motion vectors.

Accordingly, claim 3 is allowable for this reason as well as its dependence on claim 1.

Claims 4, 5, and 6 recite a motion vector searching method that includes, *inter alia*, a

learning step of learning tendencies. For the reasons discussed above for claim 1, Yokoyama

does not disclose a "tendency" feature. Accordingly, claim 4 is allowable at least for this reason.

Claims 5 and 6 are allowable for similar reasons as discussed above for claims 2 and 3, as well as

for their dependency on claim 4.

Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Yokoyama

in view of Horne (U.S. Patent No. 5,473,379). Horne is basically used to show a recording

medium having a software based program for executing a motion vector searching method.

Applicants submit that claim 7 is allowable for its recited "tendency" feature for the same

reasons discussed above for claim 1. Horne does not make up for this deficiency in Yokoyama.

In addition, Applicants respectfully submit that the present invention and Yokoyama were, at the

time of invention, subject to an obligation of assignment to the same organization (NEC

Corporation).  Accordingly, under the provisions of 35 U.S.C. § 103(c), Yokoyama is

disqualified as prior art against the present invention for this rejection.

In view of the above, reconsideration and allowance of this application are now believed

to be in order, and such actions are hereby solicited.  If any points remain in issue which the

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is

kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue

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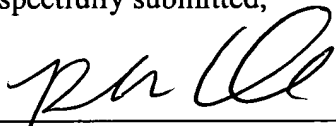
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